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| 10/536,736 | 05/27/2005 | Louis Dubertret | P08652US00/BAS | 4693 |
| 881 7590 08/05/2009 STITES & HARBISON PLLC 1199 NORTH FAIRFAX STREET SUITE 900 ALEXANDRIA, VA 22314 | | | EXAMINER KARPINSKI, LUKE E | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/536,736

Applicant(s)

DUBERTRET ET AL.

Examiner

LUKE E. KARPINSKI

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/28/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/28/2009 has been entered.

Claims

Claims 1-24 are canceled.

Claim 25 is amended.

Claims 26-47 are new.

Claims 25-47 are currently pending and under consideration in this action.

Rejections

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

New Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 25 recites 'treated in this way', however, there is no preceding language describing any treatment of said quantum dots.

Claim 25 is rejected for reciting the phrase 'method of using quantum dots'. Use claims are not allowed in US practice.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Applicant Claims
2. Determining the scope and contents of the prior art.

3. Ascertaining the differences between the prior art and the claims at issue, and resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 25, 33, 34 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 7,241,502 to Anselmann et al.

Applicant Claims

Applicant claims a method of preparing a color cosmetic comprising obtaining quantum dots and introducing said dots into a cosmetic vehicle, wherein said dots have a core/shell structure and are from 1.5-50nm.

Anselmann et al. further claim said quantum dots comprising certain semiconductors and that said cosmetics may be nail varnishes.

Determination of the Scope and Content of the Prior Art

(MPEP §2141.01)

Anselmann et al. teach color cosmetics (col. 16, lines 60-65), comprising core/shell quantum dots from 5-10nm (col. 5, lines 25-32) as claimed in claim 25.

Anselmann et al. further teach gallium nitride (GaN), germanium (Ge), and tin (Sn) (col. 7, lines 49-60) as claimed in claims 33 and 34 and that said cosmetics may be nail varnishes (col. 16, lines 60-65).

Ascertainment of the differences between the prior art and the claims

(MPEP 2141.01)

Anselmann et al. do not explicitly disclose an example wherein the claimed components, at the claimed percentages are combined into a single composition. However, Anselmann et al. do teach that quantum dots comprising said semiconductors may be used in color cosmetic formulations, including in nail varnishes.

Finding of prima facie Obviousness Rational and Motivation

(MPEP 2142-2143)

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to select each component and combine them as instantly claimed because Anselmann et al. suggests that the instant components can be combined or mixed together. In a prior art reference it is not necessary for all of the possible compositions to be exemplified in order for the art to render an invention obvious.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

2. Claims 26-29 and 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anselmann et al. in view of US Patent 5,543,436 to Hocquaux et al.

Applicant Claims

Applicant claims the method of claim 25 wherein said cosmetic vehicle comprises a hydrophobic phase, a hydrophilic phase, is an emulsion, types of emulsions, said quantum dots in either the hydrophobic or hydrophilic phase, and said cosmetic composition as a nail varnish, lacquer, or cream.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Anselmann et al. are delineated above and incorporated herein.

In particular Anselmann et al. teach cosmetics such as nail varnishes, shampoos, and gels.

Ascertainment of the Difference between Scope the Prior Art and the Claims (MPEP §2141.012)

Anselmann et al. do not teach emulsions, continuous hydrophobic or hydrophilic phase as claimed in claims 26-29. This deficiency in Anselmann et al. is cured by Hocquaux et al. Hocquaux et al. teach cosmetic compositions comprising nanopigments (col. 5 and 6), and said compositions as O/W and W/O emulsions (col. 5, lines 46-60), which reads on continuous hydrophobic and hydrophilic phases.

Further, Anselmann et al. do not teach lacquers or creams as claimed in claims 46 and 47. This deficiency is cured by Hocquaux et al. Hocquaux et al. teach nanopigments utilized in a variety of cosmetic formulations including nail varnishes and creams (col. 5).

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

Regarding claims 26-29, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. as either O/W or W/O emulsions as taught by Hocquaux et al. in order to produce the invention of instant claim 26-29.

One of ordinary skill in the art would have been motivated to do this because Anselmann et al. teach quantum dot pigments in cosmetic formulations and Hocquaux et al. teach nanopigments in cosmetics comprising O/W and W/O emulsions. Therefore it would have been obvious to utilize the emulsions of Hocquaux et al., with the formulations of Anselmann et al. in order to produce cosmetics with well known forms, such as emulsions.

Regarding claims 46 and 47, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. as lacquers or creams as taught by Hocquaux et al. in order to produce the invention of instant claim 46 and 47.

One of ordinary skill in the art would have been motivated to do this because both Anselmann et al. and Hocquaux et al. teach a variety of cosmetic formulations as examples. Therefore it would have been obvious to add such pigments to any cosmetic formulation in order to provide said cosmetic with a color as desired.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

3. Claims 30-32 and 35-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anselmann et al. in view of US Patent 6,319,426 to Bawendi et al.

Applicant Claims

Applicant claims said quantum dots present in either the hydrophilic or hydrophobic phase, specific semiconductor materials for the core and shell, pluralities of said semiconductors, a plurality of shell layers, a shell thickness, said dots coated with ligands and formed into a micelle, and the hydrophilic group of said ligand as a polyethylene glycol (PEG) and as a polysaccharide.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Anselmann et al. are delineated above and incorporated herein.

Ascertainment of the Difference between Scope the Prior Art and the Claims (MPEP §2141.012)

Anselmann et al. do not teach all of the specific core and shell components as claimed in claims 32, 36, 38, and 39. This deficiency in Anselmann et al. is cured by Bawendi et al. Bawendi et al. teach MgSe as a material, CdSe and CdS and mixtures thereof, cores of CdS, and shells of ZnO (col. 11, line 45 to col. 12 line 50).

Further, Anselmann et al. do not teach a plurality of semiconductors as claimed in claim 36. This deficiency is cured by Bawendi et al. Bawendi et al. teach mixtures of said semiconductors (col. 11, lines 64-65).

Further, Anselmann et al. do not teach a plurality of shell layers as claimed in claims 37 and 40. This deficiency is cured by Bawendi et al. Bawendi et al. teach up to 8 shell monolayers (col 12, lines 49 and 50) .

Further, Anselmann et al. do not teach quantum dots coated with a ligand, said ligand having a hydrophobic and hydrophilic end and specific moieties for said hydrophilic end as claimed in claims 41-44. This deficiency is cured by Bawendi et al. Bawendi et al. teach said quantum dots coated with a bilayer, forming a micelle complex, wherein said micelle has a hydrophobic core and hydrophilic outer layer, pluralities of hydrophobic and hydrophilic groups, and chains of greater than 8 carbon atoms (col. 17, lines 36-56 and figures 5a and 5b) and that said hydrophilic group may

be a PEG (col. 14, lines 10-15 and col. 17, line 25) or a polysaccharide (col. 5, lines 40-45 and col. 9, lines 64-68).

Further Anselmann et al. do not teach to the solubility properties of said quantum dots. This deficiency is cured by Bawendi et al. Bawendi et al. teach that uncoated dots are soluble in organic solvents and that said dots may be coated in order to be soluble in water (fig 5b).

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

Regarding claims 30 and 31, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. with said quantum dots in either the hydrophobic or hydrophilic phase as taught by Bawendi et al. in order to produce the invention of instant claim 30 and 31.

One of ordinary skill in the art would have been motivated to do this because Bawendi et al. teach that said dots may be coated to be soluble in either type of phase. Therefore it would have been obvious to utilize the coating methods of Bawendi et al., with the formulations of Anselmann et al. in order to produce quantum dots soluble in either hydrophobic or hydrophilic phases.

Regarding claims 32, 36, 38, and 39, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the

cosmetic formulations of Anselmann et al. with the core and shell materials for said quantum dots as taught by Bawendi et al. in order to produce the invention of instant claims 32, 36, 38, and 39.

One of ordinary skill in the art would have been motivated to do this because Anselmann et al. teach quantum dots and Bawendi et al. teach additional materials which quantum dots may be made from. Therefore it would have been obvious to utilize the core and shell materials of Bawendi et al., with the formulations of Anselmann et al. in order to utilize other known quantum dots..

Regarding claim 35, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. with pluralities of semiconductors as taught by Bawendi et al. in order to produce the invention of instant claim 35.

One of ordinary skill in the art would have been motivated to do this because Anselmann et al. teach quantum dots and Bawendi et al. teach that said dots may be made with pluralities of mixtures of semiconductors. Therefore it would have been obvious to utilize the quantum dots components of Bawendi et al., with the formulations of Anselmann et al. in order to additional known quantum dots.

Regarding claims 37 and 40, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. with quantum dots comprising a plurality of layers as taught by Bawendi et al. in order to produce the invention of instant claims 37 and 40.

One of ordinary skill in the art would have been motivated to do this because Bawendi et al. teach that quantum dots may have up to 8 shell monolayers. Therefore it would have been obvious to utilize the multiple shell monolayers of Bawendi et al., with the formulations of Anselmann et al. in order to impart the properties that a thicker shell layer would have.

Regarding claims 41, 42, and 44, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to produce the cosmetic formulations of Anselmann et al. with said quantum dots coated in a micelle form, said coating having a hydrophobic core and hydrophilic envelope, wherein said core comprises carbon chains with eight or more carbons as taught by Bawendi et al. in order to produce the invention of instant claims 41, 42, and 44.

One of ordinary skill in the art would have been motivated to do this because Bawendi et al. teach such coatings on quantum dots. Therefore it would have been obvious to utilize the coatings of Bawendi et al., with the formulations of Anselmann et al. in order to alter the solubility of said quantum dots.

Regarding claim 43, although neither Anselmann et al., nor Bawendi et al. teach the specific polysaccharides claimed, however, Bawendi et al. do teach that polysaccharides may be utilized and it would have been obvious to one of ordinary skill in the art at the time of the instant invention to choose from among the most common polysaccharides such as dextran, starch, and cellulose.

From the teachings of the reference, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed

invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to Arguments

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Claims 25-47 are rejected.

No claims are allowed.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKE E. KARPINSKI whose telephone number is (571)270-3501. The examiner can normally be reached on Monday Friday 9-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEK

/Mina Haghighatian/
Primary Examiner, Art Unit 1616